1. What does the universal law of gravitation state?
   A. Force is directly proportional to the distance between two objects
   B. Force is inversely proportional to the mass of two objects
   C. Force is inversely proportional to the square of the distance between objects
   D. Force is independent of mass and distance (C)

Explanation : The universal law states that the gravitational force is directly proportional to the product of the masses and inversely proportional to the square of the distance between them.

2. What is the value of acceleration due to gravity (g) on Earth's surface?
   A. 8.9 m/s^2 B. 9.8 m/s^2
   C. 10.1 m/s^2 D. 9.2 m/s^2 (B)

Explanation : Using the formula $g = \frac{GM}{R^2}$, the calculated value on Earth is 9.8 m/s^2.

Q3. Which of the following quantities remains constant irrespective of location?
   A. Weight B. Mass
   C. Acceleration due to gravity
   D. Thrust (B)

Explanation : Mass is a measure of inertia and remains constant everywhere, unlike weight, which depends on gravity.

4. The weight of an object on the moon is how much compared to its weight on Earth?
   A. 1/2 B. 1/4
   C. 1/3 D. 1/6 (D)

Explanation : Due to the moon's smaller mass and radius, gravitational pull is 1/6th that of Earth.

5. What is the SI unit of pressure?
   A. Newton B. Joule
   C. Pascal D. Watt (C)

Explanation : Pressure is measured in pascal (Pa), which is equivalent to one newton per square meter (N/m^2).

6. Why does a sharp knife cut better than a blunt one?
   A. It has more mass B. It reduces force
   C. It increases the contact area
   D. It exerts more pressure on a small area (D)

Explanation : Sharp edges concentrate the force on a smaller area, increasing pressure and making cutting easier.

7. What is buoyant force?
   A. Force acting along the surface of a liquid
   B. Upward force exerted by a fluid on an immersed object
   C. Downward force due to gravity
   D. Horizontal force due to motion in liquid (B)

Explanation : Buoyant force is the upward force that fluids exert on objects immersed in them.

8. Which principle explains why ships float and stones sink?
   A. Newton's first law B. Pascal's law
   C. Archimedes' principle
   D. Universal gravitation (C)

Explanation : Archimedes' principle states that the buoyant force equals the weight of displaced fluid, explaining floating and sinking.

9. What happens to the gravitational force if the distance between two objects is doubled?
   A. It becomes four times
   B. It remains the same
   C. It becomes half
   D. It becomes one-fourth (D)

Explanation : Since gravitational force is inversely proportional to the square of distance, doubling the distance makes the force 1/4th.

10. What does the equation F=m×gF = m \times g represent?
    A. Thrust B. Weight
    C. Acceleration D. Pressure (B)

Explanation : This formula represents weight, where force (F) is the product of mass (m) and acceleration due to gravity (g).